

Lower San Joaquin watershed.—The rivers of this watershed averaged somewhat lower than during the preceding month, and were lower generally than at any other time in their history. There was an alarming scarcity of water for all purposes, and there was practically none in the Calaveras River after the 5th of the month.

**NOTES ON THE STREAMS AND WEATHER OF THE
UPPER SAN JOAQUIN WATERSHED.**

By W. E. BONNETT, Local Forecaster.

All streams of the Upper San Joaquin watershed continued at very low stages throughout the month of October, but they were not the lowest of record at any point. As might be expected in a month with an almost total absence of rainfall at all elevations, there was practically no fluctuation. However, the flow was somewhat better sustained than the low stages earlier in the season indicated as probable late in the season.

In the temperature record the month is divided into two almost equal parts, during the first of which the

temperature was largely deficient, while during the second it was even more largely in excess, so that as a whole it was about 2° warmer than the average October.

Frosts which occurred on the 5th and 6th are among the earliest recorded and probably more damaging than any that have occurred on so early a date. Owing to the dry condition of the air and soil there was practically no actual deposit of frost, but vines and tender vegetation in many localities were blackened. It was at first thought that fruit still on the vines had suffered no injury, but that it was badly injured appeared several weeks later, when it was more mature and preparations for shipment were made. Sufficient numbers of berries on each bunch were softened, so as to endanger the keeping qualities of the whole.

The fine drying weather which prevailed in September continued through October, with very few threatening periods and practically no rainfall. Ninety-three per cent of the possible sunshine equals the highest previously recorded, and the per cent of humidity was the lowest of record for the month of October.